
Histone h3.3 mutations: a variant path to cancer.

Journal:	Cancer Cell
Publication Year:	2013
Authors:	Benjamin T K Yuen, Paul S Knoepfler
PubMed link:	24229707
Funding Grants:	Molecular mechanisms governing hESC and iPS cell self-renewal and pluripotency

Public Summary:

A host of cancer types exhibit aberrant histone modifications. Recently, distinct and recurrent mutations in a specific histone variant, histone H3.3, have been implicated in a high proportion of malignant pediatric brain cancers. The presence of mutant H3.3 histone disrupts epigenetic posttranslational modifications near genes involved in cancer processes and in brain function. Here, we review possible mechanisms by which mutant H3.3 histones may act to promote tumorigenesis. Furthermore, we discuss how perturbations in normal H3.3 chromatin-related and epigenetic functions may more broadly contribute to the formation of human cancers.

Scientific Abstract:

A host of cancer types exhibit aberrant histone modifications. Recently, distinct and recurrent mutations in a specific histone variant, histone H3.3, have been implicated in a high proportion of malignant pediatric brain cancers. The presence of mutant H3.3 histone disrupts epigenetic posttranslational modifications near genes involved in cancer processes and in brain function. Here, we review possible mechanisms by which mutant H3.3 histones may act to promote tumorigenesis. Furthermore, we discuss how perturbations in normal H3.3 chromatin-related and epigenetic functions may more broadly contribute to the formation of human cancers.

Source URL: <https://www.cirm.ca.gov/about-cirm/publications/histone-h33-mutations-variant-path-cancer>